the water meadows by flooding, will know how to estimate the value of irrigation upon such a parched but rich soil as this. But there must be many persons in this colony who have witnessed the effects of irrigation in hot climates, and I hope that this short paper may induce some of these persons to come forward, and add their knowledge to the subject. The River Moorabool gets its supply of water from the surrounding ranges about Bungingyon, Lal Lal, Egerton, &c. Two arms—the Moorabool and Lal Lal—join and form the river: each of these arms fall over precipices of basalt about eighty feet deep perpendicularly. The Lal Lal Falls are probably more than eighty feet high, and beautifully columnar in their formation above and below these falls. Granite is abundant, but there is none in the immediate proximity with the Falls. There would be very little difficulty in ascertaining how far these plains could be irrigated directly from the present channel of the river, as sections have been taken for the Geelong and Balaarat Railway, which runs only a few miles from the river nearly the whole way, so that cross levels might run out from these sections, and the facts easily obtained. Should irrigation be introduced into this colony, I have no doubt but that it would bring with it the cultivation of many commercial vegetable products at present unknown here; it being at present impossible to produce them from the scarcity of water, and which cannot be cultivated without a constant supply of water during the period of their growth. In conclusion, I beg to remark that probably in a short time levels will be run through the whole of the colony, for the purpose of railway communication; and it will be an easy matter to ascertain from those levels the fall of the different rivers, and what portions of the colony could be practically irrigated.

Art. IX.—*Some Observations on Primary Schools.* By William E. Hearn, LL.D., M.A., *Professor of History and Political Economy in the University of Melbourne.*

The subject of Primary Education is confessedly one of extreme importance and extreme difficulty. There is no public question on which, as regards the general principle, men of all parties are so fully agreed, and yet there is none on the details of which so much difference has arisen. Of all our social difficulties that of education is probably the one for

which the public would most thankfully accept a satisfactory solution. I will not undertake to perform a task which so many wise and good men have failed to accomplish, but I wish to call attention to some conditions which seem necessary to the efficient working of elementary schools, and which have hitherto been too much disregarded.

Both the Educational Boards which exist in Victoria have been most zealous in promoting the objects for which they have been established. They have been indefatigable in building school houses, in founding new, and improving old schools, and in raising the standard of attainments among their teachers. Yet it is, perhaps, from this very energy and zeal that they have failed to observe the defects of their system. A bad system, well administered, possesses a considerable amount of vitality. If, however, it is painful to see a well contrived scheme spoiled in the hands of blundering officers, it is not less painful to witness the waste of skill and earnestness of purpose upon a system which is radically unsound.

I have said that both the Educational Boards bestow great and laudable pains upon the improvement of their masters. We have now to see what is the task for which they thus train them. If we enter any ordinary school we shall see a solitary master in charge of fifty or sixty children. Except in those cases where an infant school is attached, the ages of these children range from three to thirteen years, and their attainments vary from a very indistinct notion of their alphabet, to book-keeping, or, perhaps, geometry. It is not too bold an assertion, that to teach properly so many and so differently circumstanced children is wholly beyond the powers of any one man. The children must, of course, be roughly divided into classes; only one class can be heard at one time; the other classes remain at their seats; the master is distracted between attending to his class and keeping order among the unemployed, and is thoroughly wearied in attempting to discharge a duty which ought never to have been imposed on him. If we continue our observations we shall find that the same scene is repeated, with very slight variation, in some six or seven other schools, all of which are generally within a very short distance of each other.*

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* The following figures, which are taken from the last report of the Denominational Board, will shew the correctness of this statement:—That Board had under its charge, in 1854, 213 schools. The average number on the roll in these schools was 67; the number of teachers of all classes, including pupil teachers, was 344, or rather more than one and a half to each school.

It is true that there are many schools wonderfully well conducted, and many able, earnest, and successful teachers. If there were not such men, the system would have long since been exploded. But we might expect very different results from those which we at present witness, if such men were relieved from their present cruel position, and if they received full scope for the exercise of their respective powers.

It sometimes happens that the mere statement of a grievance suggests at once the appropriate remedy. It is so in the present case; if we wish to increase the efficiency of these schools we must combine them. It would not be easy to find any system more thoroughly unscientific than the present. It is by the combination of labour, by the united exertions of many persons working together at the same time and in the same place, that we obtain the maximum of power; it is by the division of employments, by the assignment of a separate function to a separate class, that we obtain the maximum of skill. In any occupation, therefore, the quantity of work done will be increased, and its quality will be improved, in proportion to the increase of the classes of workers, and to the increased number of workers in each class. This law, so universally acknowledged, and in our daily practice almost instinctively carried out, is altogether disregarded in our present system of education. That system divides where it should combine, and combines where it should divide. In place of the combination of labour, and the divisions of employments, it gives the division of labour and the combination of employments. It divides labour to the utmost possible extent, for it reduces it to that of a single head; it combines employment to the greatest extent of which the case will admit, for it compels one master to teach children most widely differing in their years and their attainments. What the simple but unbending principle to which I have referred requires is, that we should have one school with seven masters, rather than seven schools each with one master.

The first and most obvious result of this change would be a great reduction in the number of teachers. It is well known that in many cases two men, when acting together, can do more than six when acting singly. Those who are acquainted with the practical administration of schools, know that two masters together will have less difficulty in managing eighty boys than in conducting two separate schools of twenty each. If the attention of the master be confined to a single class, of the same attainments, his power will be in-

creased. The same exertion which is required to produce any single result is often sufficient to produce many similar results. It is nearly as easy to carry twenty letters to the same place as it is to carry one. It is not much more expensive to print a hundred copies of a book, than it is to print fifty; so a teacher, who is nearly helpless among fifty boys, of various ages and degrees of proficiency, may be in a very different position among even one hundred boys of similar standing and attainments.

The extent of this saving will be more clearly seen by taking an actual case. There are usually four classes in the ordinary schools. There are about four hours each day of secular instruction; each class is, therefore, about one hour with the master. There are six denominations, and therefore there are often six Denominational schools, and at least one National school, in the same district, each under a separate master; if there be one school with seven masters, instead of seven schools each with one master, each of the four classes will have a separate master for the whole of the four hours, and three masters will remain unemployed. The masters could easily deal with the increased classes, when they were of the same kind; but, if any class should prove too large, or if it were found undesirable to keep the children so long at class, the master could make such a sub-division as would best meet the requirements of his pupils.

A much more important consequence than any reduction in the number of masters, would be, the increased amount of instruction which the children would thus receive. If we allow for the necessary sub-division, it will not be too much to say, that a child should do as much in one month, under this system, as he now does in three. The tendency of parents prematurely to withdraw their children from school, is one of the great obstacles against which the teacher has everywhere to contend. In Victoria, the temptations to such a step are unusually great. It is, therefore, necessary for all teachers, but for us most of all, wisely to economise the time during which the children remain.

Another benefit which would naturally follow from this plan would be, that each master would be able to devote his entire attention to one particular class of children. It is not hard to understand that teaching geometry is a different thing from teaching the alphabet. The most experienced college tutor would be at a sad loss in an infant-school; and it is not to the managers of infant-schools that we are in-

clined to look for efficient instructors of the adult. If teachers were to devote themselves to separate parts of the different branches of a school education, we might well believe that they would soon acquire an amount of skill in their respective departments, far beyond anything to which we are at present accustomed. Nor let it be said, that the narrow limits of primary education afford no room for elaborate subdivision. Both Mr. Babbage and Mr. Mill refer to the fact, which was stated in evidence before a committee of the House of Commons, that the construction of a watch is the result of one hundred and two perfectly distinct occupations. We ought not, then, to grudge five or six similar distinctions in the education of our children.

We can seldom foretell all the advantages which follow from the application of any sound principle. In the present case, however, there is one so unexpected, yet so important, that it must not be overlooked. It is possible that, while we have been considering merely the best means for increasing the efficiency of our schools, we may have stumbled upon the solution of that perplexing problem, which seeks to reconcile the conflicting claims of a united and a religious education. It is needless to refer to the unhappy disputes which have parted, both in this colony and at home, many good and earnest men, all truly anxious to promote the education of the people. With a real difference subsisting, the advocates of the rival systems have yet much in common. The Nationalist insists that all education should be united; the Denominationalist, that all education should be religious. The National Board protest that religious instruction is actually given in their schools; the Denominational Board* congratulate themselves when they make an approach to union. Neither denies the principles which the other supports, but each attaches a different value to those principles. Both parties would doubtless rejoice if any means could be shown, by which this much-vexed question could be set at rest. Such a method may, perhaps, be found in the arrangement which I have suggested. If, when the schools were combined, the masters in each school were to represent the different denominations, there could be no difficulty in giving to the children of each denomination such religious instruction as their respective clergymen should direct. The schools are open for five hours daily. During one hour, each master

* See their Report for 1854-5, page 9.

might have for his class all those who professed the same creed with himself. During the remaining four, the children would be divided—not by creeds, but by ages—and would receive secular instruction, without any reference to religious belief, from the masters appointed to preside over each class. The education would thus be separate as far as it was religious, and united as far as it was secular.

The following cases will illustrate my meaning:—The last Report of the Denominational Board (p. 6,) points out the necessity which exists in this colony for upper departments in schools, and observes that the only apparent method of effecting this object is, "to provide a master for the common schools, of such abilities as shall enable him to carry on the higher branches of education, while he either superintends or conducts the lower part of the school." In this case, where additional efficiency is sought, it would be desirable to appoint to the school a second master, who should have the especial charge of the more advanced classes. To select a good scholar to teach some fifty children, at the same time, all the variations, from the alphabet to the higher branches of education, would be, indeed, to place Pegasus under the cart.

Again, in Canada, as in our mixed schools, teachers are appointed with a due regard to the religious opinions of the local majority. If the minority be dissatisfied, they can establish a separate school. But they receive in aid of their exertions only a certain sum for the teacher's salary, and they are not exempted from any of the local assessments or rates for common school purposes. In this case, where religious security is the object, the addition of a second master of a different creed would attain that object—would save the expense of building and furnishing a second schoolhouse—and would greatly increase the teaching power in the district.

The plan which I have suggested is by no means unsupported by precedent. Mr. Kay,* in speaking of the primary schools of Saxony, states, "that in the town-schools there are generally eight classes, instructed in eight separate class-rooms, four for boys, and four for girls; that the fourth class contains the least, and the first class the most advanced of the children; that each class is under the charge of a separate teacher." The same writer elsewhere (p. 68), points out the

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* "Social Condition and Education of the People in England and Europe," II. 253.

point, however, we must trust to the good sense and the good feeling of both the clergy and the laity of all denominations; and we must hope that they will not be indisposed to make some slight mutual concessions, if there is a reasonable prospect of effecting a great general benefit.

Another difficulty may arise in reference to the school accommodation. The concentration of schools would require a different arrangement of school-houses from that which their dispersion necessitates. This objection, however, only applies to those houses that are actually built, and has no reference to future operations. It has, too, at present less weight than in a few years hence it might justly claim. Excepting those in the towns, the school-houses throughout the colony are seldom edifices of so costly a character as to present any serious impediment to the execution of our scheme. Where there were superfluous houses and reserves, the most obvious course would be to sell them, and apply the proceeds to the erection of suitable buildings. In some cases it might be possible to render the existing buildings available, by devoting separate houses to separate classes. Each school-house would then become a class-room. In this way, if a child of six years old applied for admission at a school where children of twelve years of age were taught, he would indeed be taken, but would be at once transferred to the neighbouring school-house, which was appropriated to the children of his standing.

Again, it may be said that in thinly-peopled districts this plan could not be carried out, except at an extravagant cost. It is quite true that in such districts we cannot expect so complete a division as in more populous localities. The division of employment is limited by its market. But neither in the town nor in the rural districts would it be necessary to have each denomination represented in each school. Such representation would depend, as it in fact does at this moment, upon the religious elements in the population. For instance, of the 32 Denominational Schools in Melbourne, there are three which belong to the Church of Scotland. If those 32 were reduced to 11, it would not be necessary to have a Presbyterian master in each school. It would certainly be desirable that each denomination should be actually represented in every school. The true test, however, of the number of masters, would be the efficiency of the school. When that question was determined, the next consideration should be the religious character of the surrounding population. Care should be taken that the masters represented the

improved classification and the economy in buildings to which this combination in town-schools gives rise — advantages which are rendered more conspicuous by their total absence in the country districts. (See p. 203.) He also states, that in mixed schools, when two teachers are required, they are elected, each by a different sect, and that each conducts the religious education of the children of his own creed.

I shall now briefly consider the objections which may be urged against this scheme. The first is, the probability that the masters, differing from each other in creed, and mutually independent, would continually quarrel with each other. As far as the difference of religion is concerned, there is no reasonable ground for apprehension. Experience has fully shown that men may hold different creeds, and yet live very happily together. I have been for years connected in daily intercourse with men who differed from me in religious belief, and yet we never had the shadow of disagreement. The Model School in this city presents another instance. It happens, although from mere accident, that the masters in that establishment represent almost all the leading denominations, and yet I believe that this difference has never given rise to a single dispute. At the same time, in such a case, the masters who belong to different creeds, act as a check upon each other, and thus give the public the best security against any undue interference.

I am, however, well aware that, apart from all religious differences, jealousies and disagreements are only too likely to arise among men placed in the circumstances of independent teachers in the same school. This difficulty would be in a great degree met, by bringing, in each school, all the fees into one common fund, and sharing that fund in stated proportions among all the masters. They would thus all become partners in the business, and would all have a direct interest in its success. It would probably be prudent to give one of them a higher salary and position, and to hold him responsible for the general discipline of the school.

It is possible, also, that the patrons of the separate schools, and especially the different religious bodies, may feel reluctant to admit other parties to a share in the management of their schools. No material change, however, in the local patronage of the schools would be requisite. Besides, if something should be taken away, an equivalent would be given. It would not be less desirable to be joint patrons of a large, than to be sole patrons of a small, school. On this

prevailing denominations. At present, in the country districts, the schools are either National, or one denomination only is represented. I have already shown the reduction which might be effected in the number of masters. Some of these supernumeraries might be sent to assist in the rural schools, and thus, without any additional expense, every school in the colony might have at least two masters, and in every district two denominations, if not more, might be represented.

It is probable that the public would not regard even a considerable increase of cost as a serious objection to any plan which would obviate all the difficulties which have hitherto impeded the progress of National Education. But in fact the system of concentration would probably be found not only more efficient, but much cheaper than the system of dispersion. It is not merely in the substitution of a single for a double management, nor in the reduction of masters, nor in the number of buildings, nor in the quantity of public land which the present system requires, that the saving would be fonnd. In such a system as I have described, the quality of the education would be so much improved, that it might be expected soon to become almost, if not altogether, self-supporting. There are, indeed, some who would not regard this result as an advantage, and would prefer to offer to the public a perfectly gratuitous education. I believe that gratuitous education is good neither for the pupil nor the teacher. The latter has no personal interest in the success of his school: the former values but little that which cost him little. It is not cheap education, but good education, that the people want. On this subject we have some remarkable evidence. In King's Somborne, a poor agricultural parish in Hertfordshire, the present Dean of Hereford took great trouble to improve the education given in his school. In a short time the school became self-supporting, and has continued so for several years. In order to test the accuracy of his views, the Dean doubled the school fee, and he found that the labourers gladly paid the increased sum when they were satisfied that they were really getting value for their money. On the contrary, in New York, where education is wholly gratuitous, and where the school-tax is very heavy, not more than one-third of the children whose names are on the roll, actually attend. It is the boast of America, that the highway is not more free to every citizen than the schoolhouse is to every child, and that for no other object do her

people so heavily tax themselves as for education. It would be, perhaps, a prouder boast for Victoria, if even the poorest parent should find it worth his while to pay for the education of his children, and if schools, soon after their establishment, should cease to require assistance from the State.

The same principle which we have thus applied to our system of education, will also apply to the manner in which that system has been administered. In the two rival Boards of Education, we have a sufficiently obvious instance of divided labour and wasted power. If the cause which leads to this division were removed, the two boards, without doubt to their own gratification, and to the great advantage of the public, might at once be amalgamated. I have no doubt that, in their united character, they would soon present another illustration of the benefit of the *combination of labour*. But it is well known that an honorary board is by no means the best administrative instrument. It is always slow and difficult to work: it is generally composed of persons who are fully occupied with other and more pressing duties. It is ungracious to find fault with gratuitous services, and the responsibility, by being divided, is proportionately weakened. All these difficulties are aggravated, when the subject-matter of their charge involves an amount of special knowledge, which is hardly to be expected in persons engaged in uncongenial pursuits. It is at the same time desirable that the various religious denominations should be represented, as well on the central as on the local boards. But this object may be obtained without any sacrifice of efficiency The general administration of the department should be entrusted to a small bond of salaried officers. Such a board might readily be formed, with very little additional expense, from the chief officers of the educational departments. From this body an appeal should lie to a Board of Visitors, composed in the way in which honorary boards are usually constructed. It is not likely that the visitors would often be required to interfere; but the mere existence of the right would afford the desired security. This system is in force in the Queen's Colleges in Ireland. These institutions are managed by a council, elected by the professors, and an appeal from their acts lies to an Honorary Board of Visitors, composed of the representatives of the different denominations and the principal professions. These arrangements have worked admirably. In this separation of functions, we have again the *division of employments*.

Such a Board of Education, undisturbed by a ruinous competition, composed of men skilled in their work, and devoted to it, and supported by an enlightened public opinion, would render greater services than we might at first sight suppose, towards the general diffusion of knowledge. It might at least help to establish an asylum for destitute children, and a reformatory school for juvenile offenders. It might render valuable assistance in promoting adult education. In some parts of Germany, evening classes for adults are held in the school-house, twice in the week. In the Austrian empire, the numbers in attendance on these repetition classes, as they are called, amount to nearly 700,000 persons. With competent teachers, what is to prevent a similar practice in Victoria? But the most important task of the Board would consist in raising the office of teacher to the rank of a regular and acknowledged profession, and in training its teachers to be worthy members of that profession. Such a reform could not, from its nature, be immediately effected; but the foundation of the system could readily be laid. No effort should be omitted which might tend, however indirectly, to secure the independence of the Educator, to increase his skill, to stimulate his professional sympathies, and to protect his profession, as other professions are protected, from the discredit which the intrusion of unqualified practitioners occasions. By these means, a better class of men will be induced to take charge of our schools, and the hands of the teacher will greatly be strengthened, when he occupies that social position to which he is so well entitled.

I have endeavoured to show that there is at least a possibility of a comprehensive system of public instruction. I have pointed out that the increase of schools does not necessarily imply the increase of education. To effect that object —to render a really good and useful education universal—we must make the education which we offer really good and useful. But as in physical, so in social science, nature, when she has been conquered by obedience, always gives us more than we desire or deserve. We may well, then be gratified, although we can hardly be surprised, if we find that the means of rendering our system of education thoroughly effective, should also prove the means of rendering it at once united, religious, and self-supporting.